

PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION

Improvements relating to Combined Jet and Diffuser Nozzles for use in Fire Fighting

We, JOHN KERR McMYN, a British Subject, of Brockhurst Hall, London Road, Northwich, in the County of Chester, HENRY GEORGE CLEMENTS, a 5 British Subject, of 30, Ffynnongroew Road, Rhyl, in the County of Flint, and CLIFFORD SMITH, a British Subject, of 30, Trafalgar Road, Wigan, in the County of Lancaster, do hereby declare 10 the nature of this invention to be as follows:—

This invention relates to combined jet and diffuser nozzles for attachment to branch pipes which are coupled to hose 15 and used for fire fighting purposes.

A nozzle is known for this purpose which combines two main elements one for attachment to the branch pipe and this has a coarse exterior male thread. 20 The other or nozzle structure is fashioned with an internal female thread and has at its delivery end an annular rim or edge and a lower annular valve seating. An 25 adjustable mushroom valve with lower shaped valve rim is concentrically located at the delivery end of the nozzle. By adjusting the nozzle structure with relation to the mushroom valve either a hollow jet or a diffusing spray or curtain 30 is obtainable. Such a combined jet or diffuser is broadly known.

In practice it is found that a whirling or rotary motion is imparted to the jet or spray, and in particular is this so 35 where the water is supplied by the action of a centrifugal pump.

According to this invention, means are provided in connection with the element which is attached to the branch pipe to 40 correct this, and is located in the bore of the element to be fixed to the branch pipe. It consists of a centrally supported cylindrical body or spindle of small diameter with inner conical, rounded, or shaped 45 end, and thin, radially disposed webs or partitions which are fixed in the bore of the element.

The forward end of the cylindrical

body has attached to it the mushroom valve, by the relative adjustment of which 50 the desired character of jet or diffusing spray is obtained.

To further indicate the nature of the invention there is now described an exemplary construction. 55

According to this, there is fixed within the bore of the element to be secured to the branch pipe a solid, preferably cylindrical, body or spindle say two inches or more long and $\frac{5}{8}$ inches diameter (according to size of the nozzle device). This has its inner end coned or shaped and is also provided with several radial webs or thin partitions, conveniently three. These radial fins or partitions are a forced fit 60 as to their outer edges in the bore, or are otherwise fixed in place. As thus, the bore supports the cylindrical body, and the fins or partitions provide three longitudinal passage ways. 65

The forward end of the cylindrical body is bored and tapped for attachment of the shank of the mushroom valve which is thus disposed concentrically in the bore of the nozzle structure which is adjustable 70 to said mushroom valve. By adjustment of the nozzle structure the character of jet or diffuser is adjusted, or the nozzle can be closed, as known. 75

It is found that the use of the central 80 solid cylindrical or like body with the radial webs or partitions tends to correct the whirling or rotary motion mechanically imparted to the water discharged. In practice this is a desirable result. 85

A nozzle as described and mounted on a branch pipe is well adapted to be used with a portable or mobile pump, or any water supply with reasonable pressure, for varied fire fighting uses. 90

Dated the 5th day of May, 1941.

For the Applicants,

E. K. DUTTON & CO.,

Chartered Patent Agents,

5, John Dalton Street, Manchester, 2.

COMPLETE SPECIFICATION

**Improvements relating to Combined Jet and Diffuser Nozzles
for use in Fire Fighting**

We, MYRTLE MAY McMYN, a British subject, of Brockhurst Hall, London Road, Northwich, in the County of Chester, Legal representative of John Kerr McMyn, deceased, a British subject, late of Brockhurst Hall, London Road, Northwich aforesaid, HENRY GEORGE CLEMENTS, a British subject, of 30, Ffynnongroew Road, Rhyl, in the County of Flint, and CLIFFORD SMITH, a British subject, of 30, Trafalgar Road, Wigan, in the County of Lancaster, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to combined jet and diffuser nozzles for attachment to branch pipes such as are coupled to hose and used for fire fighting purposes.

A nozzle is known for this purpose which combines two main elements one for attachment to the branch pipe and this has a coarse exterior male thread. The other or combining nozzle structure is fashioned with an internal or female thread and has at its delivery end an annular rim or edge and a lower annular valve seating. An adjustable mushroom valve with inner shaped valve rim is concentrically located at the delivery end of the nozzle. By adjusting the nozzle structure with relation to the mushroom valve either a hollow jet or a diffusing spray or curtain is obtainable. Such a combined jet or diffuser is broadly known.

In practice it is found that a whirling or rotary motion is imparted to the jet or spray, and, in particular is this so, where the water is supplied by the action of a centrifugal pump.

According to this invention, means are provided in connection with the element which is attached to the branch pipe to correct this whirling or rotary motion and such means are located in the bore of the element to be fixed to the branch pipe. It consists of a centrally supported cylindrical or like elongated body or spindle of relatively small diameter with inner conical, rounded, or shaped end, and thin radially disposed webs or partitions which are fixed in the bore of the element.

The forward end of the cylindrical body has attached to it and so support the mushroom valve, by the relative adjustment of which the desired character of jet or the desired character of diffusing spray

is obtained.

The improvements are herein further described and shown by the accompanying drawings which illustrate an effective construction of combined jet and diffuser nozzle conforming to the foregoing:—

Fig. 1 being an outside elevation.

Fig. 2 a vertical sectional elevation.

Fig. 3 shows a plan from the inlet end.

Fig. 4 a section on the line 2—2.

The element to be attached to the branch pipe already referred to is lettered *a* and the adjustable nozzle structure *e*, and combining devices of this character are known.

According to the invention and the construction shown, there is fixed within the bore *a*¹ of the element *a*, and advantageously a solid cylindrical or elongated body or spindle *b* shown in the drawing as slightly tapered. This body or spindle *b* is some few inches long and about $\frac{1}{2}$ inch mean diameter in the example illustrated, and this would vary within limits according to the size of nozzle device. This body or spindle *b* has its inner end *b*¹ coned or shaped for the passing water, and is also provided with several radially disposed webs or thin shaped partitions *c*, three being shown. These radial fins or partitions *c* are a forced fit as to their outer edges in the bore of element *a*. They may be fixed in any other known way.

As thus, the element *a* supports the cylindrical or like body *b* and the fins or partitions provide three longitudinal passage ways in the bore.

The forward end of the cylindrical or like body is made to support the mushroom valve. For instance the end of the cylindrical body *b* is bored and screw threaded for attachment of the screwed shank *d*¹ of the mushroom valve *d* which is thus disposed concentrically in the nozzle structure *e*. This nozzle structure *e* is adjustable to the said mushroom valve *d* on turning of the nozzle structure by reason of the already mentioned screw thread arrangement. Consequently by adjustment of the nozzle structure *e* the character of the jet or diffuser is adjusted, or the nozzle can be closed, as known. The radial edges of the fins or partitions *c* may approximate to knife edges, so as to offer less resistance to water flow.

It is found that the use of the central solid elongated or like body such as marked *b* and having the webs or partitions

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c tends to correct the whirling or rotary motion mechanically imparted to the passing water which is to be discharged. In practice this is a very desirable result.

5 Although a strictly radial disposition of the webs or partitions is found to be very satisfactory, same may be somewhat curved or shaped so long as they in effect practically range from the cylindrical or 10 like body *b* and reach the interior bore of the element *a* and divide the bore into separate water passage ways for the purpose specified.

A nozzle as described and devised to be 15 mounted on a branch pipe is well adapted to be used with a portable centrifugal or other pump, or any water supply with reasonable pressure for varied fire-fighting uses.

20 The complete nozzle can be supplied in several sizes or with different sizes as to threads to suit particular sizes or makes of branch pipes.

The forward end of the nozzle structure 25 is shown with an applied resilient ring *f*. The seating for the mushroom valve *d* is lettered *g*.

The element *a* in the drawing is intended to be attached to a branch pipe 30 by the screw thread *a²*.

The element *a* and the nozzle structure *e* are packed in proper manner, as indicated at *h*, the element being shown as

made in two halves, see Fig. 2.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A combined jet and diffuser nozzle 40 of the kind referred to herein, having an element adapted to be attached to a branch pipe as known, and wherein, that is, in such element, is concentrically located a cylindrical or like elongated body or spindle of relatively small diameter with conical, rounded or shaped inner end and having thin webs or partitions radially disposed and fixed in the bore of aforesaid element with object to 45 produce separate passage ways to correct whirling or rotary motion mechanically imparted to the water, said body or spindle also serving to receive and support the mushroom valve. 55

2. A combined jet and diffuser nozzle as particularly described herein and as shown with reference to the Figures in the accompanying drawing.

Dated the 2nd day of April, 1941.

For the Applicants,

E. K. DUTTON & CO.,
Chartered Patent Agents,
5, John Dalton Street, Manchester, 2.

[This Drawing is a reproduction of the Original on a reduced scale.]

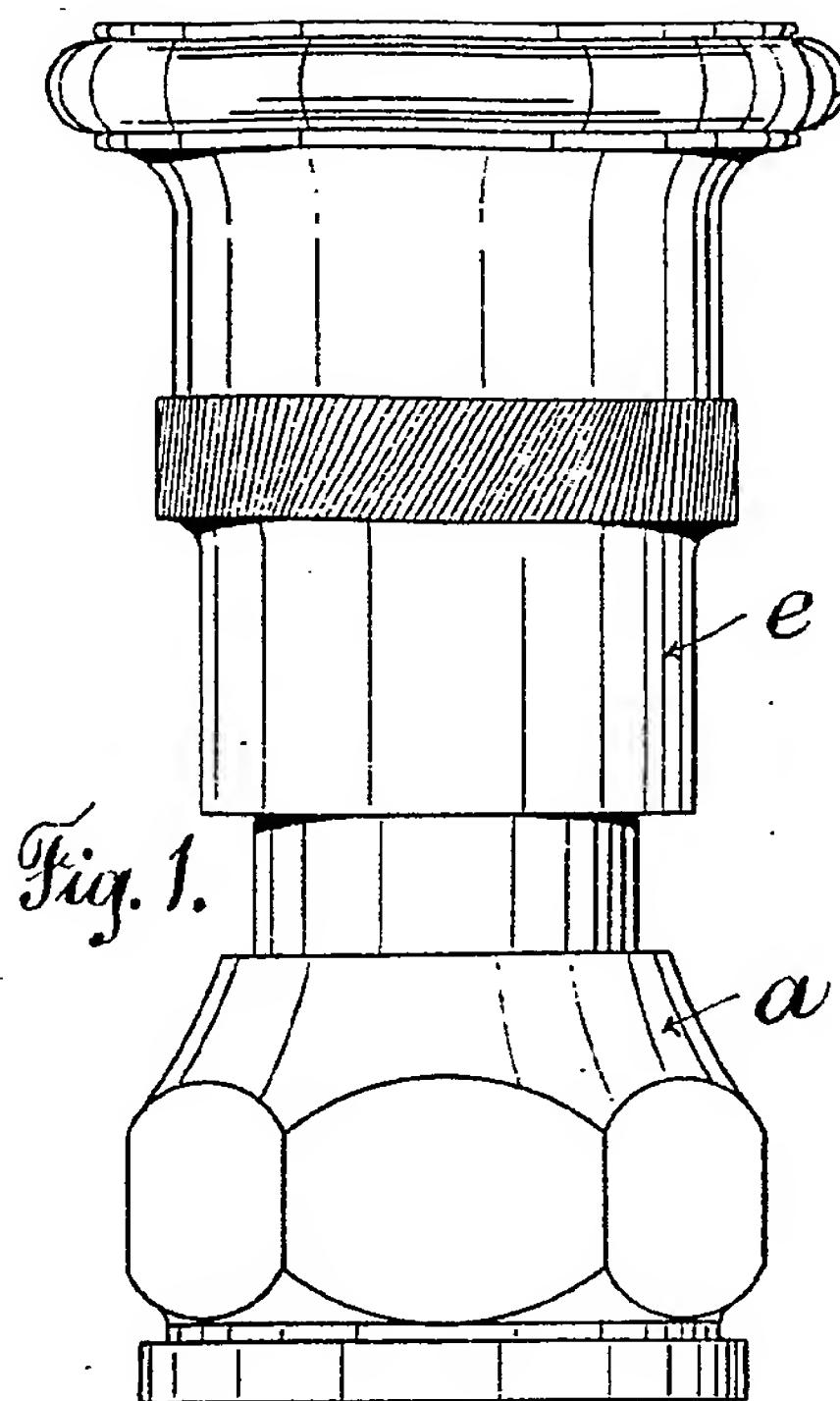


Fig. 1.

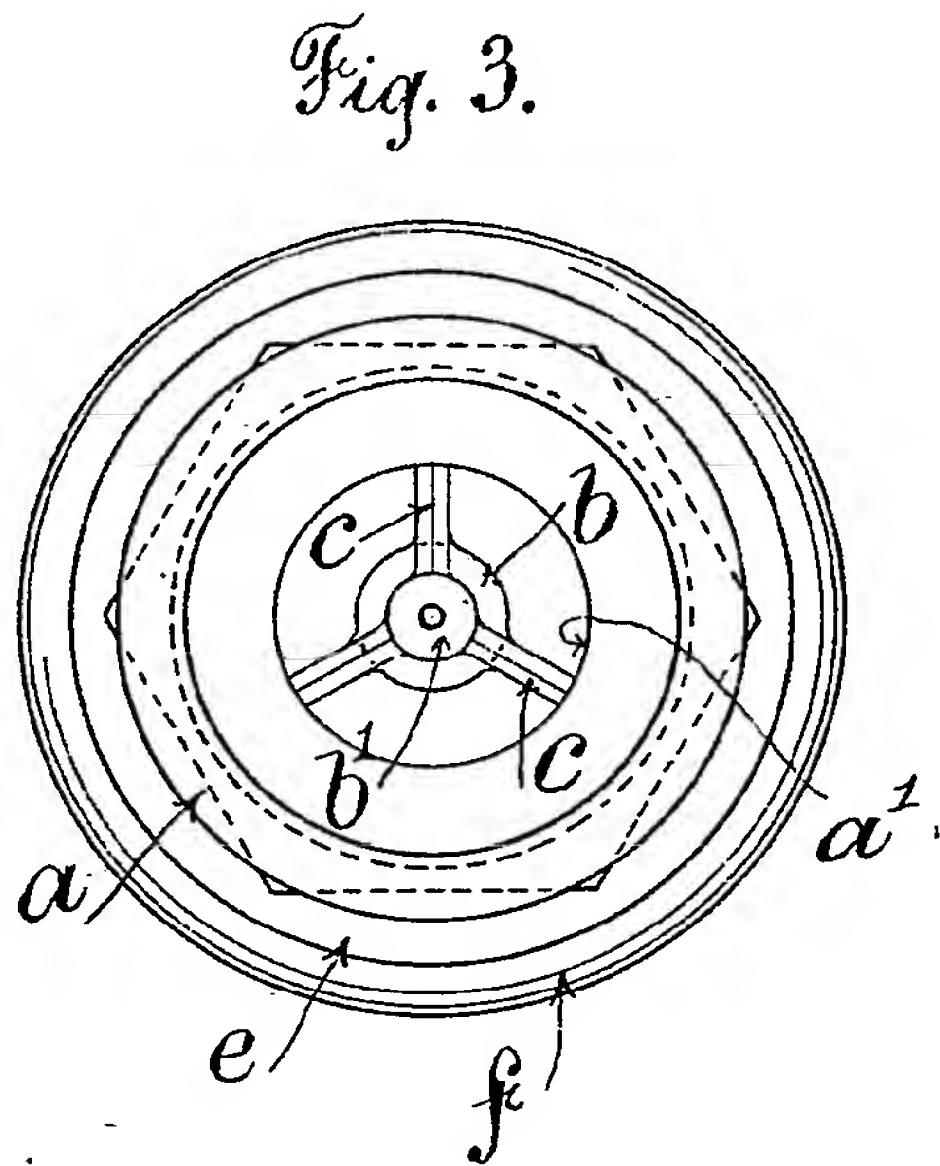


Fig. 3.

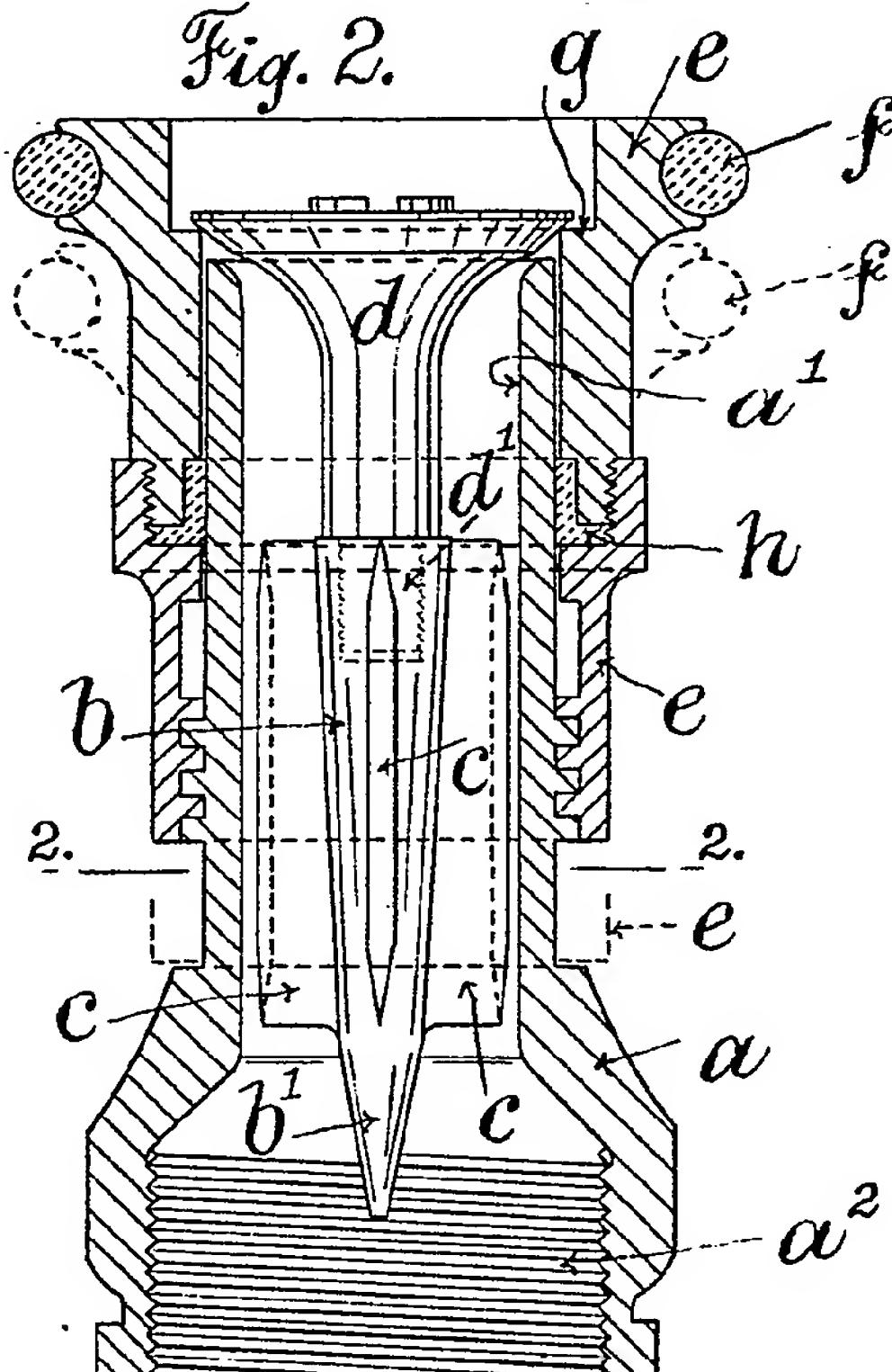


Fig. 2.

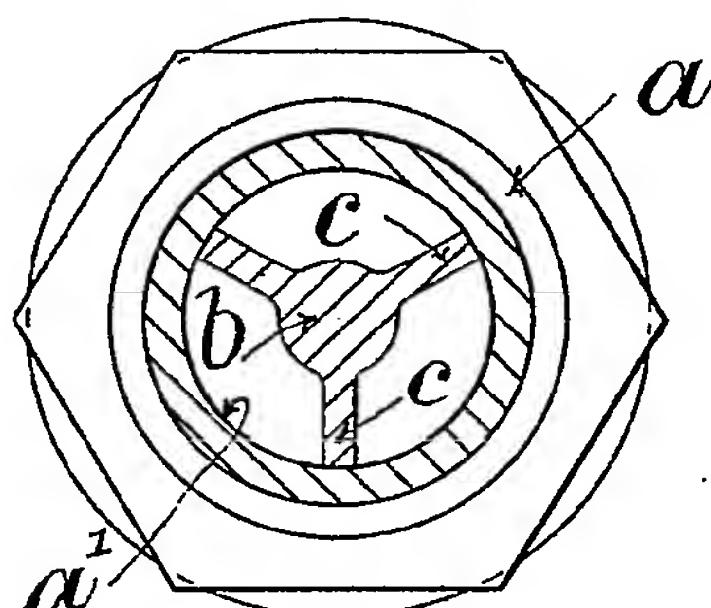


Fig. 4.